What is claimed:

1.   A method of performing physiological gating in a medical procedure,

comprising:

5   acquiring a sequence of images, the sequence of images comprises at

least a first image and a second image of a target region;

determining a first composite image based on the first and second images;

and

gating a medical procedure based on the composite image.

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2.   The method of claim 1, wherein the determining comprises subtracting the

first image from the second image.

3.   The method of claim 1, further comprising determining a first value

15 associated with a contrast of the first composite image.

4.   The method of claim 3, wherein the gating the medical procedure is

performed based at least on the first value.

20 5.   The method of claim 4, wherein the gating comprises de-activating a

radiation beam when the first value is above a prescribed threshold value.

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6.   The method of claim 1, wherein the medical procedure comprises a

radiation treatment procedure.

7.   The method of claim 1, further comprising:

5   acquiring a third image of the target region;

determining a second composite image based on the second and third

images; and

gating the medical procedure based on the second composite image.

10   8.   The method of claim 1, wherein the sequence of images are fluoroscopic

images.

9.   The method of claim 1, wherein the sequence of images are real-time

images created during a session.

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10.   A system for performing physiological gating in a medical procedure,

comprising:

means for acquiring a sequence of images, the sequence of images

comprises at least a first image and a second image of a target region;

20   means for determining a first composite image based on the first image

and the second image; and

means for gating a medical procedure based on the composite image.

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11.   The system of claim 10, further comprising means for determining a first value associated with a contrast of the first composite image.

5   12.   The system of claim 11, wherein the means for gating the medical procedure performs the gating based at least on the first value.

13.   The system of claim 12, wherein the means for gating comprises means for deactivating a radiation beam when the first value is above a prescribed
10   threshold value.

14.   The system of claim 10, wherein the medical procedure comprises a radiation treatment procedure.

15   15.   A computer readable medium having a set of stored instructions, the execution of which causes a process to be performed, the process comprising:

acquiring a sequence of images, the sequence of images comprises at least a first image and a second image of a target region;

determining a first composite image based on the first and second images;
20   and

gating a medical procedure based on the first composite image.

16.   The computer readable medium of claim 15, wherein the determining comprises subtracting the first image from the second image.

17.   The computer readable medium of claim 15, wherein the process further

5   comprising determining a first value associated with a contrast of the first composite image.

18.   The computer readable medium of claim 17, wherein the gating the medical procedure is performed based at least on the first value.

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19.   The computer readable medium of claim 18, wherein the gating comprises de-activating a radiation beam when the first value is above a prescribed threshold value.

15   20.   The computer readable medium of claim 15, wherein the medical procedure comprises a radiation treatment procedure.

21.   The computer readable medium of claim 15, wherein the process further comprising:

20   acquiring a third image of the target region;

          determining a second composite image based on the second and third images; and

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gating the medical procedure based on the second composite image.

22. The computer readable medium of claim 15, wherein the sequence of images are fluoroscopic images.

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23. The computer readable medium of claim 15, wherein the sequence of images are real-time images created during a session.

24. A method of performing a medical procedure, comprising:

10   providing a plurality of templates, each of the templates having an image and treatment data;

          acquiring an input image;

          registering the input image with one of the templates; and

          performing a medical procedure based on the treatment data of the one of

15 the templates that is registered with the input image.

25. The method of claim 24, wherein the registering comprises selecting a template from the plurality of templates that best matches an image in the input image.

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26. The method of claim 24, further comprising enhancing a moving object in the input image.

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27.   The method of claim 26, wherein the enhancing comprises determining a composite image of previously acquired input images.

5   28.   The method of claim 27, wherein the determining a composite image comprises performing an image averaging on the previously acquired input images.

29.   The method of claim 27, wherein the enhancing further comprises

10   subtracting the composite image from the input image.

30.   The method of claim 24, wherein the treatment data comprises radiation treatment data.

15   31.   The method of claim 30, wherein the radiation treatment data comprises one or a combination of beam-on signal, beam-off signal, beam-on duration, beam shape data, and dosage data.

32.   The method of claim 24, wherein the medical procedure comprises

20   directing a radiation beam to an object.

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33.   The method of claim 32, wherein the performing the medical procedure comprises adjusting a delivery of the radiation beam based on the treatment data.

5   34.   A system for performing a medical procedure, comprising:

means for providing a plurality of templates, each of the templates having an image and treatment data;

means for acquiring an input image;

means for registering the input image with one of the templates; and

10   means for performing a medical procedure based on the treatment data of the one of the templates that is registered with the input image.

35.   The system of claim 34, wherein the means for registering comprises means for selecting a template from the plurality of templates that best matches

15   an image in the input image.

36.   The system of claim 34, further comprising means for enhancing a moving object in the input image.

20   37.   The system of claim 34, wherein the radiation treatment data comprises one or a combination of beam-on signal, beam-off signal, beam-on duration, beam shape data, and dosage data.

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38.   The system of claim 34, wherein the means for performing a medical procedure comprises means for directing a radiation beam to an object.

5   39.   The system of claim 38, wherein the means for directing a radiation beam comprises means for adjusting a delivery of the radiation beam based on the treatment data.

40.   A computer readable medium having a set of stored instructions, the

10   execution of which causes a process to be performed, the process comprising:

providing a plurality of templates, each of the templates having an image and treatment data;

acquiring an input image;

registering the input image with one of the templates; and

15   performing a medical procedure based on the treatment data of the one of the templates that is registered with the input image.

41.   The computer readable medium of claim 40, wherein the registering comprises selecting a template from the plurality of templates that best matches

20   an image in the input image.

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42.   The computer readable medium of claim 40, wherein the process further

comprising enhancing a moving object in the input image.

43.   The computer readable medium of claim 42, wherein the enhancing

5   comprises determining a composite image of previously acquired input images.

44.   The computer readable medium of claim 43, wherein the determining a

composite image comprises performing an image averaging on the previously

acquired input images.

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45.   The computer readable medium of claim 43, wherein the enhancing

further comprises subtracting the composite image from the input image.

46.   The computer readable medium of claim 40, wherein the radiation

15   treatment data comprises one or a combination of beam-on signal, beam-off

signal, beam-on duration, beam shape data, and dosage data.

47.   The computer readable medium of claim 40, wherein the medical

procedure comprises directing a radiation beam to an object.

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48. The computer readable medium of claim 47, wherein the performing the medical procedure comprises adjusting a delivery of the radiation beam based on the treatment data.

5 49. A method of performing physiological gating in a medical procedure, comprising:

providing a template;

acquiring an input image of a target region;

registering the input image with the template;

10 determining a position of the target region based on the registering; and

gating a medical procedure based on the determined position of the target region.

50. The method of claim 49, further comprising enhancing a moving object in 15 the input image.

51. The method of claim 50, wherein the enhancing comprises subtracting an average of previously acquired input images from the input image.

20 52. The method of claim 49, wherein the registering comprises selecting the template from a plurality of templates that best matches an image in the input image.

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53. The method of claim 52, wherein the determining the position of the target region comprises determining a position of the image in the input image that best matches with the template.

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54. The method of claim 49, wherein the medical procedure comprises a radiation treatment, and the gating comprises activating or deactivating a radiation beam based on the determined position of the target region.

10 55. A system for performing physiological gating in a medical procedure, comprising:

    means for providing a template;

    means for acquiring an input image of a target region;

    means for registering the input image with the template;

15   means for determining a position of the target region based on the registering; and

    means for gating a medical procedure based on the determined position of the target region.

20 56. The system of claim 55, wherein the means for registering comprises means for selecting the template from a plurality of templates that best matches an image in the input image.

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57.   The system of claim 55, wherein the medical procedure comprises a

radiation treatment, and the means for gating comprises means for activating or

deactivating a radiation beam based on the determined position of the target

5   region.

58.   A computer readable medium having a set of stored instructions, the

execution of which causes a process to be performed, the process comprising:

          providing a template;

10   acquiring an input image of a target region;

          registering the input image with the template;

          determining a position of the target region based on the registering; and

          gating a medical procedure based on the determined position of the target

region.

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59.   The computer readable medium of claim 58, wherein the process further

comprising enhancing a moving object in the input image.

60.   The computer readable medium of claim 59, wherein the enhancing

20   comprises subtracting an average of previously acquired input images from the

input image.

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61.   The computer readable medium of claim 58, wherein the registering comprises selecting the template from a plurality of templates that best matches an image in the input image.

5   62.   The computer readable medium of claim 58, wherein the determining the position of the target region comprises determining a position of the image in the input image that best matches with the template.

63.   The computer readable medium of claim 58, wherein the medical

10   procedure comprises a radiation treatment, and the gating comprises activating or deactivating a radiation beam based on the determined position of the target region.

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